

APPENDIX A
"CLEAN" VERSION OF EACH PARAGRAPH/SECTION/CLAIM
37 C.F.R. § 1.121(b)(ii) AND (c)(i)

CLAIMS (with indication of amended or new):

1. (Amended) A wire-bonding apparatus for forming electrical connections between a semiconductor chip and a lead frame, comprising:
a plurality of bond-heads;
a plurality of work holders, each associated with a respective one of the bond-heads, and configured to support a lead frame in an operative relation to the associated bond-head; and
a controller which is programmable to operate each bond-head of the apparatus independently to perform bonding of wires between a semiconductor chip and a leadframe simultaneously with the other bond-heads but without synchronization of movement between the bond-heads.
5. (Amended) A wire-bonding apparatus according to claim 1, including a storage device in which leadframes are storable and which is operatively connected with the apparatus to automatically provide leadframes to the workholder and/or to automatically receive leadframes that have been processed.
10. (Amended) A wire-bonding apparatus according to claim 1, which includes a cardcage for storing electrical and/or electronic components of the controller and devices to drive mechanical components of the apparatus.
14. (Amended) A wire-bonding apparatus according to claim 1, wherein the controller is programmable to operate the plurality of bond-heads to simultaneously perform bonding of wires of different types.
15. (Amended) A wire-bonding apparatus according to claim 14, wherein the different types of wires include gold wires and copper wires.

16. (Amended) A wire-bonding apparatus according to claim 14, wherein the different types of wires include different wires of different diameters.

17. (Amended) A wire-bonding apparatus according to claim 1, wherein the controller is programmable to operate different bond-heads to perform bonding according to different patterns simultaneously.

18. (New) A wire-bonding apparatus according to claim 1, further including a structure operative to isolate each work holder from vibration of the other work holders.

19. (New) A wire-bonding apparatus according to claim 1, each of the bonding-heads includes an ultrasonic transducer by which the bonding operations are performed.

20. (New) A wire-bonding apparatus according to claim 19, wherein vibration isolation is provided by a gap between the work holders on the apparatus to isolate each work holder from the vibration of another work holder.

21. (New) A wire bonding apparatus according to claim 19, wherein:

each work holder rests on a separate base and each separate base rests on a common lower chassis,
and

vibration isolation is achieved by the respective bases being separated from each other by a gap, and
from the common lower chassis by a vibration-insulating material.

22. (New) A wire-bonding apparatus for forming electrical connections between a semiconductor chip and a lead frame, comprising:

a plurality of bond-heads each including an ultrasonic transducer;

a plurality of work holders, each associated with a respective one of the bond-heads, and configured to support a lead frame in an operative relation to the associated bond-head; and

a controller which is programmable to operate each bond-head of the apparatus independently to perform bonding of wires between a semiconductor chip and a leadframe simultaneously with the other bond-heads but without synchronization of movement between the bond-heads.

APPENDIX C
COMPLETE SET OF "CLEAN" CLAIMS
PURSUANT TO 37 C.F.R. §1.121(C)(3)

1. (Amended) A wire-bonding apparatus for forming electrical connections between a semiconductor chip and a lead frame, comprising:
a plurality of bond-heads;
a plurality of work holders, each associated with a respective one of the bond-heads, and configured to support a lead frame in an operative relation to the associated bond-head; and
a controller which is programmable to operate each bond-head of the apparatus independently to perform bonding of wires between a semiconductor chip and a leadframe simultaneously with the other bond-heads but without synchronization of movement between the bond-heads.
5. (Amended) A wire-bonding apparatus according to claim 1, including a storage device in which leadframes are storable and which is operatively connected with the apparatus to automatically provide leadframes to the workholder and/or to automatically receive leadframes that have been processed.
10. (Amended) A wire-bonding apparatus according to claim 1, which includes a cardcage for storing electrical and/or electronic components of the controller and devices to drive mechanical components of the apparatus.
14. (Amended) A wire-bonding apparatus according to claim 1, wherein the controller is programmable to operate the plurality of bond-heads to simultaneously perform bonding of wires of different types.
15. (Amended) A wire-bonding apparatus according to claim 14, wherein the different types of wires include gold wires and copper wires.

16. (Amended) A wire-bonding apparatus according to claim 14, wherein the different types of wires include different wires of different diameters.

17. (Amended) A wire-bonding apparatus according to claim 1, wherein the controller is programmable to operate different bond-heads to perform bonding according to different patterns simultaneously.

18. (New) A wire-bonding apparatus according to claim 1, further including a structure operative to isolate each work holder from vibration of the other work holders.

19. (New) A wire-bonding apparatus according to claim 1, each of the bonding-heads includes an ultrasonic transducer by which the bonding operations are performed.

20. (New) A wire-bonding apparatus according to claim 19, wherein vibration isolation is provided by a gap between the work holders on the apparatus to isolate each work holder from the vibration of another work holder.

21. (New) A wire bonding apparatus according to claim 19, wherein:

each work holder rests on a separate base and each separate base rests on a common lower chassis,
and

vibration isolation is achieved by the respective bases being separated from each other by a gap, and
from the common lower chassis by a vibration-insulating material.

22. (New) A wire-bonding apparatus for forming electrical connections between a semiconductor chip and a lead frame, comprising:

a plurality of bond-heads each including an ultrasonic transducer;

a plurality of work holders, each associated with a respective one of the bond-heads, and configured
to support a lead frame in an operative relation to the associated bond-head; and

a controller which is programmable to operate each bond-head of the apparatus independently to perform bonding of wires between a semiconductor chip and a leadframe simultaneously with the other bond-heads but without synchronization of movement between the bond-heads.